

Remarks

Favorable reconsideration of this application, in view of the following remarks and discussion, is respectfully requested.

Claims 1-10 are currently pending in the application.

In the outstanding Office Action, Claims 1-3 and 5-10 were rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 4,984,453 to Enomoto in view of European Publication No. EP 0 867 708 to Giannakopoulos et al. (Giannakopoulos). Claim 4 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Enomoto in view of Giannakopoulos, and further in view of U.S. Patent No. 4,856,326 to Tsukamoto. Applicants respectfully request withdrawal of the rejections for the following reasons.

The present invention is directed to material strength measuring and evaluating methods for measuring and evaluating at least one of a peel strength and a fragility breaking strength of a fragile thin film, as well as material strength measuring and evaluating apparatuses. Independent Claim 1 recites the method including pressing an indenter into a test object and measuring an indentation load and an indentation depth, while at the same time detecting charged particles emitted from a peel starting point or a breakage starting point. Independent Claim 6 recites the apparatus including a charged particle collecting element disposed in the vicinity of a front end portion of an indenter and formed integrally with or independently from the indenter.

Regarding the rejection of independent Claim 1, Enomoto is directed to an indenter for fractoemission measurement. As shown in Figure 3, for example, of Enomoto, charged particles emitted from a specimen 12 flow to an end portion 3 of an indenter 1 and are transmitted via a lead wire 4 to a charge detector 13.¹

¹ Column 4, lines 13-16.

Applicants respectfully assert, however, that Enomoto does not teach or suggest the claimed features of detecting charged particles emitted from a peel start point or a breakage starting point, as recited in independent Claim 1. Rather, Applicants respectfully assert that, contrary to the Office Action's assertions, in Enomoto the charge detector 13 is electrically connected to the end portion 3 of the indenter 1, and the end portion 3 electrically contacts the specimen 12, such that the charge detector 13 measures a current through the specimen 12, and does not detect charged particles, for example.

Thus, Applicants respectfully assert that the claimed method recited in independent Claim 1 provides numerous advantages that are not provided by Enomoto. By way of specific non-limiting examples, Applicants respectfully assert that the claimed method can measure positive or negative charged particles emitted from a peel start point or a breakage start point toward an outside of a test object, which can be collected near a front end portion of an indenter by charged particle collecting elements. Further, Applicants respectfully assert that the claimed method can collect the charged particles without contacting a test object, and can collect the charged particles from a non-conductive test object. Applicants respectfully assert that Enomoto cannot provide such advantages, as Enomoto measures the current through the conductive specimen 12 by directly contacting the end portion 3 of the indenter 1 with the conductive specimen 12.

Specifically, independent Claim 1 recites "detecting charged particles emitted from a peel starting point or a breakage starting point."

The Office Action relies on Giannakopoulos in an attempt to remedy the deficiencies of Enomoto. However, Applicants respectfully assert that Giannakopoulos does not teach or suggest, and the Office Action does not assert that Giannakopoulos teaches or suggests, the claimed features of detecting charged particles emitted from a peel starting point or a breakage starting point, as recited in independent Claim 1.

Thus, for the above reasons, Applicants respectfully assert that neither Enomoto nor Giannakopoulos, whether taken alone or in combination, teaches or suggests the claimed features recited in independent Claim 1. Therefore, Applicants respectfully request that the rejection of independent Claim 1 under 35 U.S.C. § 103(a) be withdrawn and the independent claim allowed.

Regarding the rejection of independent Claim 6, Applicants respectfully assert that Enomoto does not teach or suggest the claimed features of a charged particle collecting element disposed in the vicinity of a front end portion of an indenter. Rather, Enomoto shows the end portion 3 of the indenter 1 directly contacting the conductive specimen 12. Further, as discussed above with regard to independent Claim 1, because the indenter 1 measures the current through the conductive specimen 12, the end portion 3 of the indenter cannot be disposed away from the conductive specimen 12.

Thus, for reasons similar to those discussed above with regard to independent Claim 1, Applicants respectfully assert that the claimed apparatus recited in independent Claim 6 provides numerous advantages that are not provided by Enomoto. By way of specific non-limiting examples, Applicants respectfully assert that the claimed apparatus can measure positive or negative charged particles collected near a front end portion of an indenter by charged particle collecting elements without contacting a test object, and can collect the charged particles from a non-conductive test object.

Specifically, independent Claim 6 recites “a charged particle collecting element disposed in the vicinity of a front end portion of the indenter.”

The Office Action relies on Giannakopoulos in an attempt to remedy the deficiencies of Enomoto. However, Applicants respectfully assert that Giannakopoulos does not teach or suggest, and the Office Action does not assert that Giannakopoulos teaches or suggests, the

claimed features of a charged particle collecting element disposed in the vicinity of a front end portion of an indenter, as recited in independent Claim 6.

Thus, for the above reasons, Applicants respectfully assert that neither Enomoto nor Giannakopoulos, whether taken alone or in combination, teaches or suggests the claimed features recited in independent Claim 6. Therefore, Applicants respectfully request that the rejection of independent Claim 6 under 35 U.S.C. § 103(a) be withdrawn and the independent claim allowed.

Dependent Claims 2-5 and 7-10 are allowable for at least the same reasons as independent Claims 1 and 6, from which they respectively depend, as well as for their own features. Thus, Applicants respectfully request that the rejections of dependent Claims 2-5 and 7-10 under 35 U.S.C. § 103(a) be withdrawn and the dependent claims allowed.

Consequently, in view of the above remarks, no further issues are believed to be outstanding in the present application, and the present application is believed to be in condition for formal Allowance. A Notice of Allowance for Claims 1-10 is earnestly solicited.

Should the Examiner deem that any further action is necessary to place this application in even better form for allowance, the Examiner is encouraged to contact the undersigned representative at the below listed telephone number.

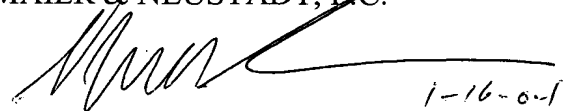
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Respectfully submitted,

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A handwritten signature in black ink, appearing to read 'G. Maier', is written over a horizontal line. To the right of the signature, the date '1-16-04' is handwritten.

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